

Abstract of the Disclosure

A communication system and method with orthogonal block encoding is provided.

- 5 Encoded signals are transmitted by repeating transmissions of symbol blocks with a phase or sign change selected for each block from a sequence of phase or sign changes. Different symbols are transmitted using orthogonal sequences. The decoding uses different orthogonal sequences for separating the received encoded signals into corresponding separate channels. The orthogonal encoding is removed from the encoded transmitted
- 10 signals and corresponding ones of the repeated symbols are added in successively received repeated blocks after the orthogonal encoding is removed. A transmitter uses a digital source encoder to encode information into symbols, and each symbol is repeated a preselected number of times to successively produce groups of repeated bits. Each repeat bit is changed in phase or sign by application of a sign or phase change determined by a
- 15 selected assigned orthogonal code associated with the transmitter. The sign changed bits are interleaved from a number of such groups to successively generate a number of blocks, each composed of the different sign or phase changed bits of the preselected number of repeated groups and having a collective sign or phase change corresponding to a common sign change or phase shared by all bits of the block. The interleaved blocks then modulate
- 20 a radio signal for transmission.